Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Empowering Broadband Consumers Through Transparency	CG Docket No. 22-2

COMMENTS OF SPACE EXPLORATION TECHNOLOGIES CORPORATION

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I. Introduction and Summary

Space Exploration Technologies Corp. ("SpaceX") welcomes the opportunity to comment on the Federal Communications Commission ("FCC" or "Commission") notice of proposed rulemaking[1] implementing the Infrastructure Investment and Jobs Act[2] directive to promulgate rules for the broadband consumer label. SpaceX agrees with Congress and the Commission that facilitating access to information about broadband offerings drives marketplace competition and innovation by empowering consumers to make informed decisions about their broadband purchases. As the Commission explains, the label is designed to do just that by "enabling consumers to comparison shop when choosing broadband services and providers that best meet their needs and match their budgets."[3]

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1 *Empowering Broadband Consumers Through Transparency*, Notice of Proposed Rulemaking, CG Docket No. 22-2 (rel. Jan. 27, 2022) ("NPRM").

2 The Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, 135 Stat. 429, 60504(a) (2021) ("Infrastructure Act").

3 NPRM ¶ 1.

SpaceX believes this rulemaking should therefore focus on ensuring consumers have the information they need—in a form they need it—to make easily informed, apples-to-apples broadband choices. For instance, what they are really buying and how much they are really paying for it? The label will only be effective, however, if the information used by consumers to "comparison shop" is *actually comparable*. To that end SpaceX has two suggestions.

First, the Commission should adopt clear definitions of performance metrics for purposes of the fixed broadband consumer label that track the definitions of speed and latency in the FCC's high-cost universal service funding programs, like the Rural Digital Opportunity Fund ("RDOF"). Leveraging the Commission's latest thinking on these fixed broadband metrics (which continued to evolve after 2016) and aligning these definitions across Commission programs is the best way to ensure that consumers get consistent and accurate information about what they are buying.

Second, the Commission should include on the label an "all in" cost of the equipment, installation, and other fees associated with delivering broadband service to a consumer's home. SpaceX understands that the price of a fixed broadband package can be made up of various components, some of which are monthly charges, which may have led to the proposed fixed broadband label's focus on isolated and monthly charges. But these monthly costs can be manipulated and confuse consumers about the true cost of the equipment and services over time. As the Open Technology Institute reported, for example, modem rental fees in the U.S. can add an additional 75 percent to the cost of monthly internet service, while router rental fees can add up to an additional 65 percent on top of advertised costs.[4] What matters most to consumers—in

[4] *See* Becky Chao & Claire Park, *The Cost of Connectivity 2020*, NEW AMERICA, OPEN TECHNOLOGY INSTITUTE, 6-7, 48 (2020), https://d1y8sb8igg2f8e.cloudfront.net/documents/The_Cost_of_Connectivity_2020__XatkXnf.pdf ("Cost of Connectivity 2020 Report").

the end—is the total "all in" costs of their purchase, including the full price of equipment, installation charges, rental charges, and whether the consumer will need to continue to pay equipment charges even after the term of a contract is completed. To empower consumers' decision making, the label should include a place to display the total, "all in" costs for all fees the consumer is required to incur above and beyond the monthly service charge—in a way that allows consumers to easily and fairly compare the full cost of offerings.

II. The Commission Should Adopt Standard Definitions of Speed and Latency That Track the Definitions Applicable to High-Cost Universal Service Recipients.

Consumers can only make informed broadband purchase decisions if they have access to accurate and comparable information about network performance. Recognizing this, the Commission's proposed fixed broadband disclosure label requires providers to disclose typical speed, latency, and packet loss measurements.[5] To enable consumer comparisons, the Commission should adopt standardized fixed broadband definitions of speed and latency that leverage its latest thinking about these metrics in the context of high-cost universal service recipients' performance obligations.

The Infrastructure Act directs the Commission "to begin [its] inquiry" with the broadband labels adopted in 2016 by the Bureaus in connection with their implementation of the 2015 Open Internet Order.[6] Those 2016 labels are a good start, providing that typical speed, latency, and

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[5] NPRM ¶ 16, App'x B.

[6] *See Consumer and Governmental Affairs, Wireline Competition, and Wireless Telecommunications Bureaus Approve Open Internet Broadband Consumer Labels*, Public Notice, 31 FCC Rcd 3358 (CGB/WCB/WTB 2016) ("2016 Public Notice").

packet loss should be displayed "consistent with the Open Internet Orders and FCC guidance."[7] The Commission should therefore begin the inquiry to define these technical metrics with the relevant discussion in the Open Internet Orders and FCC's 2016 guidance around the transparency rule. But the 2016 label is just a start, and the Commission should not end the inquiry there. Congress gave no indication that it intended to freeze forever the Commission's 2016 understanding of how to measure speed and latency—particularly when doing so would prevent consumers from having comparable and accurate information about their broadband performance purchases.

The Commission's thinking on fixed broadband metrics continued to evolve and improve after the 2016 consumer broadband label was adopted. In 2018 and 2019, the Commission adopted a sophisticated, standardized performance measurement framework for defining speed and latency to make sure that fixed broadband recipients of high-cost universal service funding meet their performance requirements.[8] Like the 2016 guidance before it, this later framework sought to balance the need for accurate information and measurement burdens, affording providers flexibility to conduct testing by employing either (1) Measuring Broadband America testing, (2) existing network management systems and tools (off-the-shelf testing), or (3) provider-developed self-testing configurations.[9]

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[7] NPRM, App'x B. *See generally Guidance on Open Internet Transparency Rule Requirements*, Public Notice, 31 FCC Rcd 5330 (2016) ("2016 Transparency Rule Guidance"). Of course, aspects of the 2015 Open Internet Order and the associated 2016 Guidance on Open Internet Transparency Rule Requirements were rescinded by the Commission's 2017 Restoring Internet Freedom Order. *Restoring Internet Freedom*, Declaratory Ruling, Report and Order, and Order, 33 FCC Rcd 311, 437-46 (2017).

[8] *Connect America Fund*, Order, 33 FCC Rcd 6509 (WCB/WTB/OET 2018) ("2018 Performance Measurement Order"); *Connect America Fund*, Order on Reconsideration, 34 FCC Rcd 10109 (2019) ("2019 Performance Measurement Order").

[9] 2018 Performance Measurement Order, 33 FCC Rcd at 6513 ¶ 9.

That 2018/2019 performance framework represents the Commission's latest and most comprehensive thinking on how to consistently define and measure speed and latency, in a context where taxpayer money is on the line. Displaying consistent and accurate information to consumers is no less important. Consumers deserve to know—and get—what they are paying for. As discussed below, SpaceX encourages the Commission to align the definitions of speed and latency for purposes of the broadband label with the definitions of speed and latency used in the FCC's high-cost funding programs. That is the best way to ensure that consumers can be confident the metrics they are comparing are not cherry-picked—but instead—are based upon standardized definitions that reflect the network performance they can expect the substantial majority of the time. And it prevents broadband providers from gaming the system by employing varying definitions of speed and latency that overstate network performance—distorting marketplace competition by preventing consumers from making fair and accurate comparisons across fixed broadband options.

This problem persists, unchecked, in the marketplace today. Viasat, for example, claims to provide broadband plans with download speeds of up to 100 Mbps for its "Platinum 100" plan.[10] But the fine print reveals that, for all plans, Viasat throttles customers, based on customer usage and congestion, "which will result in slower speeds," that VPN or remote computer access "may be very slow," and that some VPNs and video games "may not work at all."[11] Such variable descriptions of network performance make it challenging for consumers to fully understand what they are purchasing and how it compares to other broadband offerings. By

[10] *Platinum 100*, VIASAT, https://www.viasatprovider.com/plans-pricing/platinum-100/ (last visited Mar. 09, 2022).

[11] *Id.*

contrast, standardized performance measurements tell a straightforward—and different—story. Ookla data for Q2 2021 reports actual speeds for Viasat's fixed broadband service of 18 Mbps download and 3 Mbps upload.[12] By standardizing the fixed broadband label's definition of required performance metrics the Commission can ensure that consumers have the information they need to fairly compare offerings and make informed decisions.

A. Defining Fixed Broadband Speed.

The fixed broadband consumer experience depends, in part, on network speed. Providing consumers with a uniform basis to compare the typical speed of various broadband offerings—that is, speeds they can reasonably expect to experience in the vast majority of circumstances—should therefore be a key focus of the Commission's proposed consumer disclosure label. The Commission does not, however, need to remake the wheel to provide consumers with a uniform and comparable measurement of typical network speed. Instead, it can use as a baseline the approach already used in high-cost universal service funding programs for recipients with defined performance requirements. Such funding recipients are required to provide service that meets at least 80 percent of required speeds in at least 80 percent of all round-trip tests—from consumer premises to (or through) an FCC-designated internet exchange point—conducted during designated peak hours.[13] SpaceX suggests that the Commission incorporate each of these

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[12] Isla McKetta, *How Starlink's Satellite Internet Stacks Up Against HughesNet and Viasat around the Globe*, SPEEDTEST (Aug. 4, 2021), https://www.speedtest.net/insights/blog/starlink-hughesnet-viasat-performance-q2-2021/.

[13] 2018 Performance Measurement Order, 33 FCC Rcd at 6528 ¶ 51 (adopting 80/80 standard as to Connect America Fund); *Rural Digital Opportunity Fund, Connect America Fund*, Report and Order, 35 FCC Rcd 686, 769 ¶ 31 (RDOF recipients are "subject to the same uniform framework for measuring speed and latency performance along with the accompanying compliance framework as all other recipients of high-cost support required to serve fixed locations").

key components of the high-cost universal service performance framework's definition of speed into the fixed broadband label definition.

First, the Commission should adopt the RDOF peak period requirement so that consumers have access to information that tells them what their Internet experience will be like when they need it most—and when the network is busiest. The proposed label already recognizes the importance of disclosing speed (and other metrics) measured during the "peak usage period."[14] In 2016, the Commission's now-rescinded guidance on the transparency rule declined to set a peak period, instead allowing providers to select a time frame so long as they disclosed the period chosen for their disclosure.[15] In 2018, however, the Commission went on to define peak usage hours for determining speed (and other metrics) as being between 6:00 pm and 12:00 am.[16] Incorporating that peak period definition into the broadband label's definition of typical speed has dual benefits. First, as the Commission has explained, it will better track "the performance users can expect when the Internet in their local area is experiencing highest demand from users."[17] Second, it will ensure that performance is measured in a comparable way across broadband providers and plans using a standardized time frame. By defining peak period in this way, the Commission will enable consumers to compare provider information secure in the knowledge that the measurements they are looking at reflect the performance and experience they can expect when the network is busiest.

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14 NPRM, App'x B.

15 *See* 2016 Transparency Rule Guidance, 31 FCC Rcd at 5534.

16 2018 Performance Measurement Order, 33 FCC Rcd at 6520 ¶ 30.

17 2018 Performance Measurement Order, 33 FCC Rcd at 6517 ¶ 22.

Second, the Commission should clarify that fixed broadband speeds displayed on the label are speeds measured from the customer premises to the nearest FCC-designated internet exchange point ("IXP"). The 2016 guidance explained that the routes for performance measurement must "be chosen to accurately represent the actual network performance experience by consumers" and permitted fixed broadband providers to measure speeds through a "representative sampling of routes between end users and points of interconnection with edge providers or other networks."[18] The Commission refined this approach, however, in the 2018/2019 broadband performance measurement framework, requiring that actual speed be measured "between the customer premise of an active subscriber and an FCC-designated IXP."[19] As the Commission explained then, more limited measurement spans, "will not show whether that customer is able to enjoy high-quality real-time applications because it is network performance from the customer's location to the destination that determines the quality of the service from the customer's perspective."[20] This is no less true for customers making broadband purchasing decisions based on the broadband label.

Testing from the customer premises to an FCC-designated internet exchange point means that speed measurements will reflect the speeds at which data can travel from the customer to the core internet, or vice-versa. By clarifying that typical speed on consumer disclosure labels are measured from the consumer to or through an internet exchange point, the Commission can ensure that comparable metrics are disclosed to customers that will better reflect actual network performance and quality of service.

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[18] 2016 Transparency Rule Guidance, 31 FCC Rcd at 5336.

[19] 2019 Performance Measurement Order, 34 FCC Rcd ¶ 13.

[20] 2019 Performance Measurement Order, 34 FCC Rcd ¶ 13.

Third, for fixed broadband providers, upload and download speeds should be measured and disclosed in ways that align with the high-cost universal service approach. Under the performance testing requirements for those programs, at least 80 percent of recipients' speed measurements must be at or above 80 percent of their performance requirement. While the 2016 transparency rule guidance suggested providers could disclose a median speed,[21] the 80/80 standard is a more effective means of measuring consistency of speed than the median speed measurement. That is because median speed measurements are subject to significant distortion due to outlier measurements and, as the Commission has previously noted, median measurements "would not ensure consistency of speed because the distribution of values around the median may vary significantly."[22] By contrast, applying the 80/80 approach will ensure that the speeds consumers compare on disclosure labels are in line with real-world performance they can expect the vast majority of the time. Alternatively, if fixed broadband providers wish to disclose speed ranges rather than a single figure, the Commission should standardize the range for those disclosures at 20 and 80 percent of measured speeds. This would align the fixed broadband label disclosure with the universal service performance testing framework, permitting consistency across programs and comparability across broadband offerings.

Because this definition of speed performance is familiar to high-cost universal-service fund recipients with performance obligations, many providers already measure network speed using the above parameters. That means lower overall cost to collect the data necessary for consumer labels, while providing the same robust metrics the Commission uses to monitor its high-cost programs. And for those providers who are not already collecting this type of data,

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[21] 2016 Transparency Rule Guidance, 31 FCC Rcd at 5333.

[22] 2018 Performance Measurement Order, 33 FCC Rcd at 6529 ¶ 54.

there are many cost-effective ways of collecting network speed metrics, including off-the-shelf equipment and pre-existing network management infrastructure.[23]

B. Defining Fixed Broadband Latency

While download and upload speeds have historically been the "network performance metric of greatest interest to the consumer,"[24] the proposed label also requires providers to disclose network latency—and for good reason. High latency can affect the perceived quality of consumer experience, especially as to interactive services like Internet-based phone calls, video calls and conferencing, and online entertainment like gaming.[25] It is therefore important to provide consumers with a clear, simple to understand metric of typical latency when they are deciding what services to purchase.

As with speed, SpaceX suggests that the Commission adopt a definition of latency for the purpose of its proposed consumer disclosure label that incorporates measurement concepts already applied by the Commission in its high-cost universal service performance framework. RDOF low-latency broadband providers, for example, are required to provide service with latency below 100 milliseconds, round-trip, at least 95% of the time, while high latency bidders are required to provide service with latency below 750 milliseconds at least 95% of the time.[26] The Commission should borrow from this proven-effective approach to latency, which was

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[23] *See* 2018 Performance Measurement Order, *supra* note 8.

[24] FEDERAL COMMUNICATIONS COMMISSION, *Eleventh Measuring Broadband America Fixed Broadband Report*, 10 (2021), https://data.fcc.gov/download/measuring-broadband-america/2021/2021-Fixed-Measuring-Broadband-America-Report.pdf ("Eleventh MBA Report").

[25] Eleventh MBA Report at 10.

[26] 47 CFR § 54.805(b)(4).

designed to ensure that networks can support real-time applications,[27] and define typical latency for purposes of the fixed broadband label as latency measurements equal to 95% or more of peak period round-trip latency from consumer premises to (or through) an FCC-designated internet exchange point.

This proposal would incorporate the same peak period—between 6:00 pm and 12:00 am—and the same measurement span—customer premises to FCC-designated Internet exchange point—that the Commission has applied for high-cost universal service latency measurements.[28] As discussed above with respect to speed, incorporating these peak period and measurement span metrics for the latency disclosure is likewise critical to providing consumers with relevant, comparable, real-world information. Clarifying that typical latency listed on consumer labels reflects measurements during peak hours is necessary because consumers need to know how services will perform when network usage is high. As far back as 2013, the Commission recognized that "[l]atency sufficient for real-time applications such as VoIP must be available to consumers during the time they use the Internet."[29] With expanded use of residential internet service for work and life during the global coronavirus pandemic, that statement is truer than ever. And, as noted above with respect to speed, incorporating into the definition of latency a measurement span from consumer premises to FCC-designated Internet exchange point will give consumers the ability to compare performance metrics that reflect real-life latency over the entire

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[27] 47 CFR § 54.805(a).

[28] 2018 Performance Measurement Order, 33 FCC Rcd at 6516 ¶ 18. *Id.* at 6520 ¶ 30.

[29] *See Connect America Fund*, Report and Order, 28 FCC Rcd 15060, 15073 ¶¶29-30 (2013) ("2013 CAF Order").

path from their home to the wider Internet, as opposed to cherry-picked data reflecting just a section of that path.[30]

III. The Fixed Broadband Label Should Allow Consumers to Compare "All In" Costs.

Consumers also need full information about all fees and costs for fixed broadband service in a form that allows them to easily compare across providers. SpaceX has deliberately designed Starlink to make set up as simple as possible, requiring only that customers' purchase a Starlink "Dishy," plug it in, and point it to the sky, with a single, one-time equipment charge. But other providers have more complicated set up processes, which can include various equipment and set up fees that consumers may not expect or understand. Beyond monthly recurring service charges, some fixed broadband providers charge additional fees associated with installation and activation.[31] Other fixed broadband offerings include recurring equipment charges for monthly modem or other equipment rentals, which may continue even after a customer's contract term expires.[32] These various fee components—with some charges recurring and others not—make it difficult for consumers to compare across offerings to determine total "all in" costs beyond the monthly-recurring service charges. And adding to consumer confusion is the fact that some providers tout multi-year price locks for services but fail to make clear that that the guarantee

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[30] The Commission has explained that existing network management systems allow for latency testing to be completed quickly and at relatively low cost. *See, e.g.*, 2013 CAF Order, 28 FCC Rcd at 15073 ¶ 30.

[31] *See* Cost of Connectivity 2020 Report at 44 ("In the United States, CenturyLink, Charter under its Spectrum brand, Comcast under its Xfinity brand, and Verizon charge $99 or more for installation in some cities, which can amount to an additional 100 to 500 percent of the advertised monthly price for service.").

[32] Cost of Connectivity 2020 Report at 48 (identifying examples where router rental fees can add as much as 65% to consumers' monthly costs and noting that "[t]he average U.S. modem rental fee at $9.86 is more than seventeen times that of Europe's, $0.58, and eight times higher than Asia's, $1.17"). Modem rental fees in the U.S. can add as much as 75% to the cost of monthly service. *Id.* at 48.

applies only to post-promotional pricing. That means consumers can face a price hike after just a few months with a service and may feel trapped in a plan due to early termination fees.[33] The label should be designed to ensure consumers have full information about these non-service-related costs—in a form that allow them to compare apples-to-apples costs across fixed provider offerings.

The fixed broadband label's "Other Charges" section recognizes the importance of these non-service-related charges to consumer purchasing decisions. But, as proposed, the label requires disclosure of monthly rental charges for modems and gateways in one place and other one-time fees in another, without providing information about how these charges can add up to affect consumers' bottom line. That makes it harder for consumers to understand what they most need to know—the total "all in" charges associated with setting up the fixed broadband service. It also prevents consumers from being able to easily compare offerings across providers, allowing those with more complicated set up fees to break them up and display them in different parts of the label. To address this, SpaceX urges the Commission to include on the label a total, "all in," cost for any charges associated with setting up and receiving fixed broadband service. This will ensure that consumers have full information about these additional costs in a way that will allow them to compare across provider offerings and make informed purchasing decisions.

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[33] Viasat, for example, advertises certain prices in combination with a 2-year price lock. But the price lock applies "only to the standard monthly internet service fee," not to the 3-month promotional pricing consumers see up front. *See Home Internet Plans*, VIASAT, https://www.viasat.com/home-internet/plans/. Consumers are required to sign a 24-month service agreement and must pay an early termination fee of $15 for each month remaining on the agreement at the time of cancellation. *Home Internet FAQs*, VIASAT, https://www.viasat.com/home-internet/faq/ (navigate to *Billing* subheading).

IV. Conclusion

SpaceX applauds Congress and the Commission for initiating this effort to design a broadband label that will empower consumers to make informed decisions when choosing their broadband provider. But consumers can only compare broadband provider offerings if they have comparable information. To that end, the Commission should adopt standard definitions of speed and latency that leverage the Commission's latest thinking on those metrics in the high-cost universal service context. And the Commission should require disclosure of total "all in" costs for non-service-based fees and equipment to make sure consumers know the bottom line.

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